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Revision 0

Waste Management Plan for the V-Tank Area New Sites, for Test Area North, Waste Area Group 1, Operable Unit 1-10

Idaho Completion Project

Bechtel BWXT Idaho, LLC

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Idaho Completion Project
Idaho Falls, Idaho 83415

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Date

ABSTRACT

This waste management plan describes waste management and minimization activities associated with the field sampling and remediation to be performed at Technical Support Facility (TSF) -46, TSF-47, and TSF-48 at Test Area North, Waste Area Group 1, Operable Unit 1-10 at the Idaho National Engineering and Environmental Laboratory. The waste management activities described in this plan support the remedial actions presented in the *Final Record of Decision for Test Area North, Operable Unit 1-10* and are in accordance with the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory*.

This waste management plan identifies the types and the volumes (when possible) of waste that are anticipated to be generated during the sampling, analysis, and remedial action activities. In addition, this plan addresses waste characterization strategy, requirements for waste storage, transportation, treatment, and designated facilities for ultimate disposal of the remedial action waste.

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TABLES

ACRONYMS

AOC	area of contamination
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DD&D	deactivation, decontamination, and decommissioning
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
FFA/CO	Federal Facility Agreement and Consent Order
FRG	final remediation goal
FSP	Field Sampling Plan
HWMA	Hazardous Waste Management Act
ICDF	INEEL CERCLA disposal facility
IET	Initial Engine Test
ILRW	Intermediate-Level Radioactive Waste
INEEL	Idaho National Engineering and Environmental Laboratory
IW	industrial waste
IWTS	Integrated Waste Tracking System
LDR	land disposal restriction
LLW	low-level waste
LOFT	Loss-of-Fluid Test
LSA	low specific activity
LWTS	liquid waste treatment system

MLLW	mixed low-level waste
OU	operable unit
Pb	lead
PCB	polychlorinated biphenyl
PLN	plan
PPE	personal protective equipment
RCRA	Resource Conservation and Recovery Act
RD/RAWP	remedial design/remedial action work plan
RI/FS	remedial investigation/feasibility study
ROD	record of decision
RWMC	Radioactive Waste Management Complex
SMC	Specific Manufacturing Capability Facility
TAN	Test Area North
TSCA	Toxic Substances Control Act
TSD	treatment, storage, or disposal
TSF	Technical Support Facility
USC	United States Code
WAC	waste acceptance criteria
WAG	waste area group
WGS	Waste Generator Services
WMP	Waste Management Plan
WRRTF	Water Reactor Research Test Facility
WSA	waste storage area
WTS	waste technical specialist

Waste Management Plan for the V-Tank Area New Sites, for the Test Area North, Waste Area Group 1, Operable Unit 1-10

1. PURPOSE AND OBJECTIVES

This waste management plan (WMP) is designed to support the waste management and minimization activities associated with the *Group 2 Remedial Design/Remedial Action Work Plan Addendum for the Assessment and Cleanup of V-Tank Area New Sites, for the Test Area North, Waste Area Group 1, Operable Unit 1-10* (DOE-ID 2004a) at the Idaho National Engineering and Environmental Laboratory (INEEL).

This WMP describes the management of all waste generated during the sampling, analysis, and remedial action activities at Technical Support Facility (TSF) -46, TSF-47 and TSF-48, collectively called the V-Tanks Area New Sites at Test Area North (TAN). The remedial action is being performed to implement the remedies identified in the *Final Record of Decision for Test Area North, Operable Unit 1-10* (DOE-ID 1999). This action is being performed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 9601 et seq.), as implemented by the *Federal Facilities Agreement and Consent Order* (FFA/CO) (DOE-ID 1991). Field sampling and analysis activities for the V-Tank Area New Sites are described in the *Field Sampling Plan for the V-Tank Area New Sites for Test Area North, Waste Area Group 1, Operable Unit 1-10* (DOE-ID 2004b).

This plan identifies the types and the volumes (when possible) of waste that are anticipated to be generated during the remedial action. In addition, this plan addresses waste characterization strategy, requirements for waste storage, transportation, and treatment. In addition, it addresses designated facilities for ultimate disposal of the remedial action waste.

- Remediation activities that generate the waste discussed in this plan will occur within the area of contamination (AOC) at the TSF-46, TSF-47, and TSF-48 soil sites. That waste may be stored, treated, or disposed of at appropriate waste management facilities either on-Site or off-Site. The majority of waste generation is anticipated to occur during implementation of the remedial action work task activities listed below:

- Removal of contaminated soil as necessary

- Sampling of the TSF-46, TSF-47, and TSF-48 to verify remedial action goals have been achieved

- Sampling, as required, to characterize excavated soil for acceptance at the INEEL CERCLA Disposal Facility (ICDF).

2. SITE BACKGROUND

Located in the north-central portion of the INEEL, as shown in Figures 2-1 and 2-2, TAN was constructed between 1954 and 1961 to support the Aircraft Nuclear Propulsion (ANP) Program, which developed and tested designs for nuclear-powered aircraft engines until the research was terminated by Congress in 1961. The area's facilities were then converted to support a variety of other U.S. Department of Energy (DOE) research projects. From 1962 through 1986, the area was principally devoted to the Loss-of-Fluid Test (LOFT) Facility, which was used to perform reactor safety testing and studies. Beginning in 1980, the area was used to conduct research and development with material from the 1979 Three-Mile Island reactor accident (DOE-ID 1997).

During the mid-1980s, the TAN Hot Shop (DOE-ID 1999) supported the final tests for the LOFT program. Current activities include manufacture of armor for military vehicles at the Specific Manufacturing Capability (SMC) Facility and nuclear inspection and storage operations at TSF. The Initial Engine Test (IET) Facility has been deactivated, decontaminated, and decommissioned by the INEEL Deactivation, Decontamination, and Decommissioning (DD&D) program.

In 1991, the FFA/CO established 10 operable units within Waste Area Group (WAG) 1, consisting of 94 potential release sites (DOE-ID 1997). The sites include various types of pits, numerous spills, ponds, aboveground and underground storage tanks, and a railroad turntable. Operable Unit 1-10 is listed as the WAG 1 comprehensive remedial investigation/feasibility study (RI/FS) in the FFA/CO. The purpose of the RI/FS, initiated in 1995, was to (a) assess the investigations previously conducted for WAG 1, (b) thoroughly investigate the sites not previously evaluated, and (c) determine the overall risk posed by the WAG (DOE-ID 1997). The OU 1-10 RI/FS culminated with the finalization of the OU 1-10 Record of Decision (ROD) (DOE-ID 1999), which provides information to support remedial actions for eight sites where contaminants present an unacceptable risk to human health and the environment. Final remediation goals (FRGs) were established in the ROD based on long-term risks associated with Cs-137 activity.

2.1 Project Site Description

The TAN Facility includes four different facilities: (1) Technical Support Facility, (2) the Initial Engine Test (IET) Facility, (3) Water Reactor Research Test Facility (WRRTF), and (4) the SMC/ LOFT Facility. The Intermediate-Level Radioactive Waste (ILRW) Management System was constructed at the Technical Support Facility to collect, store, and treat wastewater generated by the Aircraft Nuclear Propulsion Program and other programs at various TAN facilities. The TAN/TSF ILRW Management System is composed of three subsystems: the ILRW Feed Subsystem (Tanks V-1, V-2, V-3, and V-9), the ILRW Treatment Subsystem (Liquid Waste Treatment Building [TAN-616]), and the ILRW Holding Tank Subsystem (PM-2A Tanks).

The TAN-616 Liquid Waste Treatment System (LWTS) was designed to collect, store, and concentrate radionuclide contaminated liquid waste from TAN facilities. The tanks and piping associated with both the V-Tanks and PM-2A Tank sites are part of the LWTS. The V-Tank Area New Sites consists of three newly identified areas requiring evaluation under CERCLA. Because of their close proximity to the V-Tanks (see Figure 2-3), these new sites potentially contain contaminants from years of waste-related activities in the area.

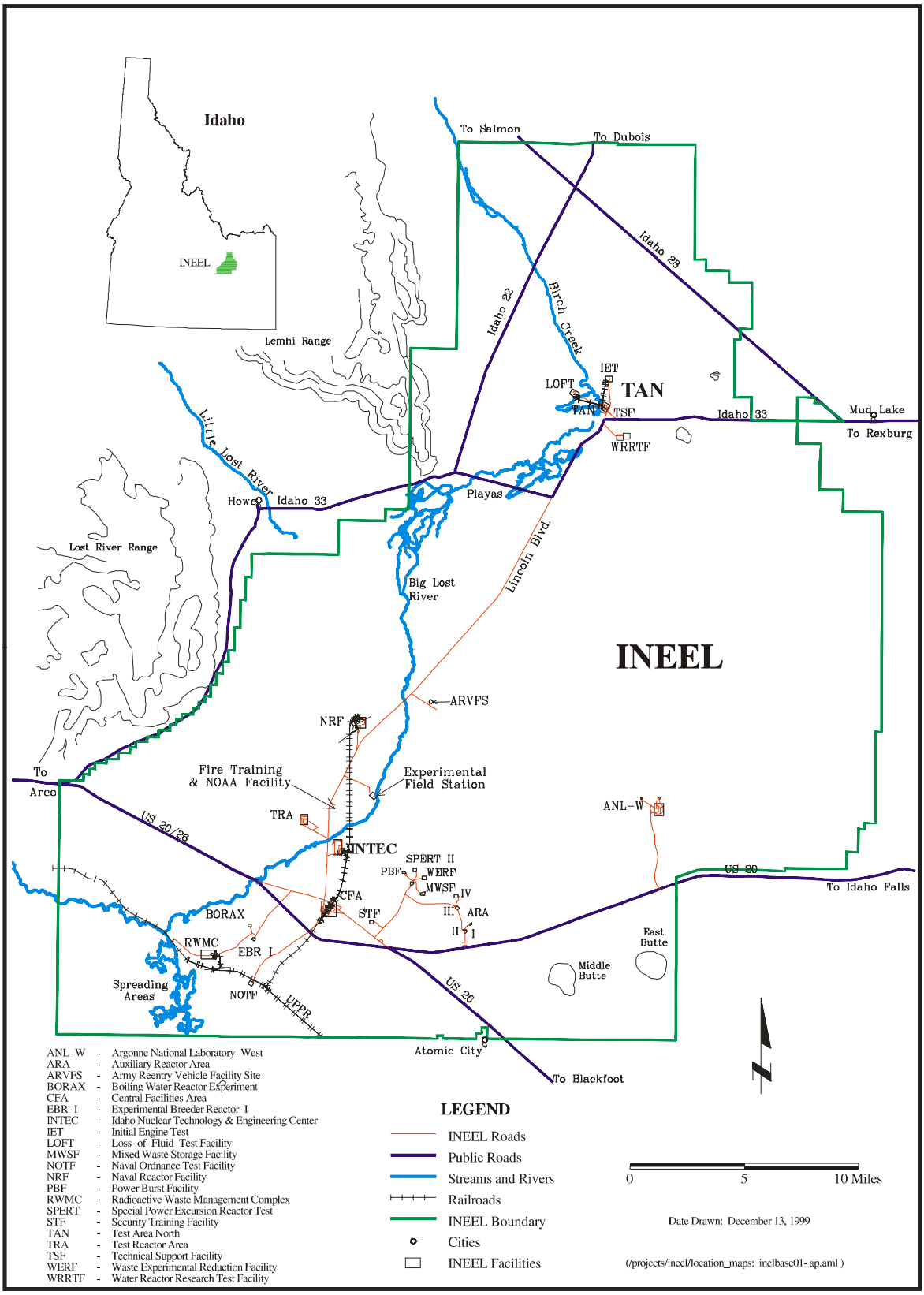

Figure 2-1. Location of Test Area North at the Idaho National Engineering and Environmental Laboratory.

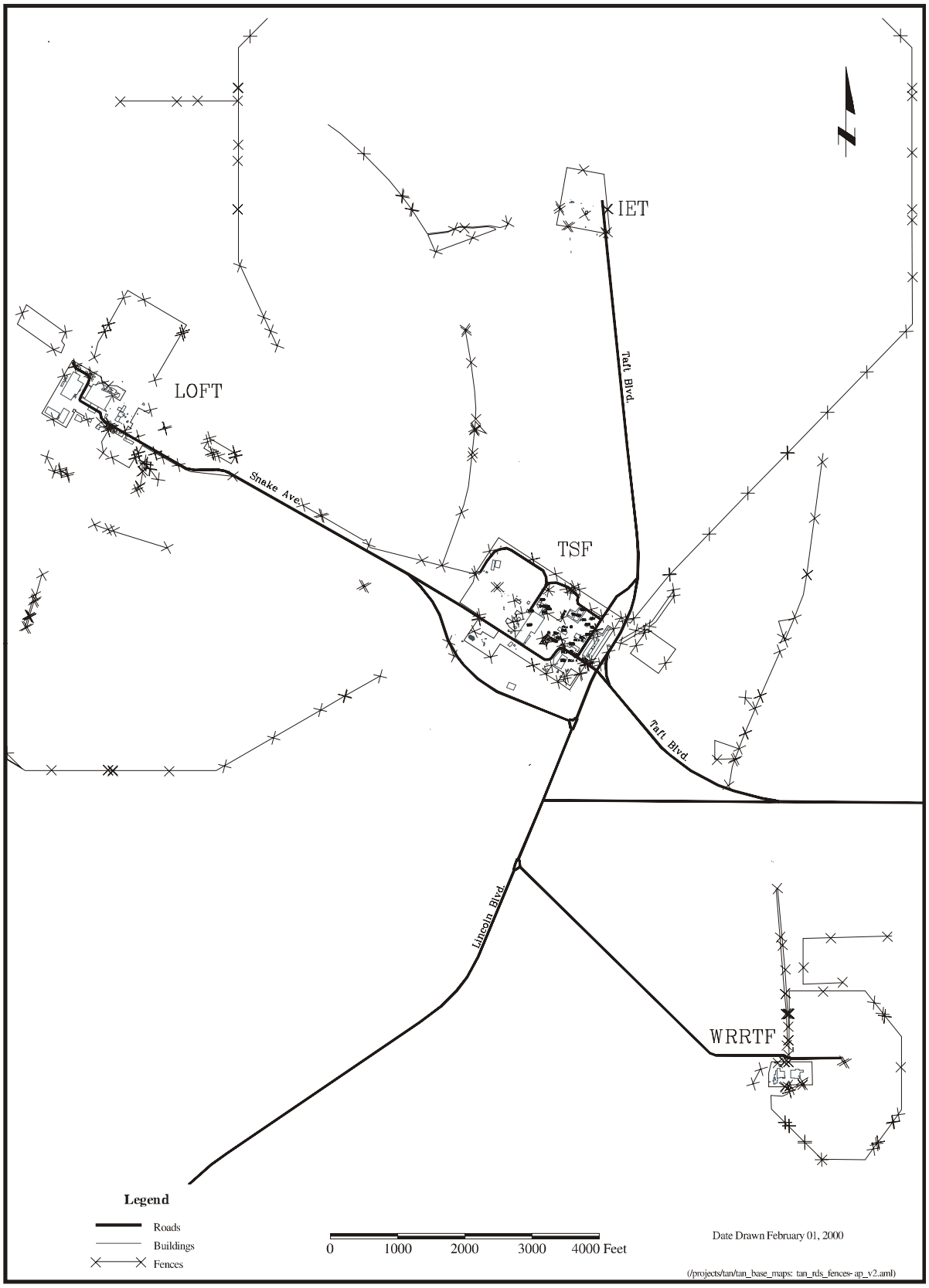

Figure 2-2. Map showing Test Area North facilities.

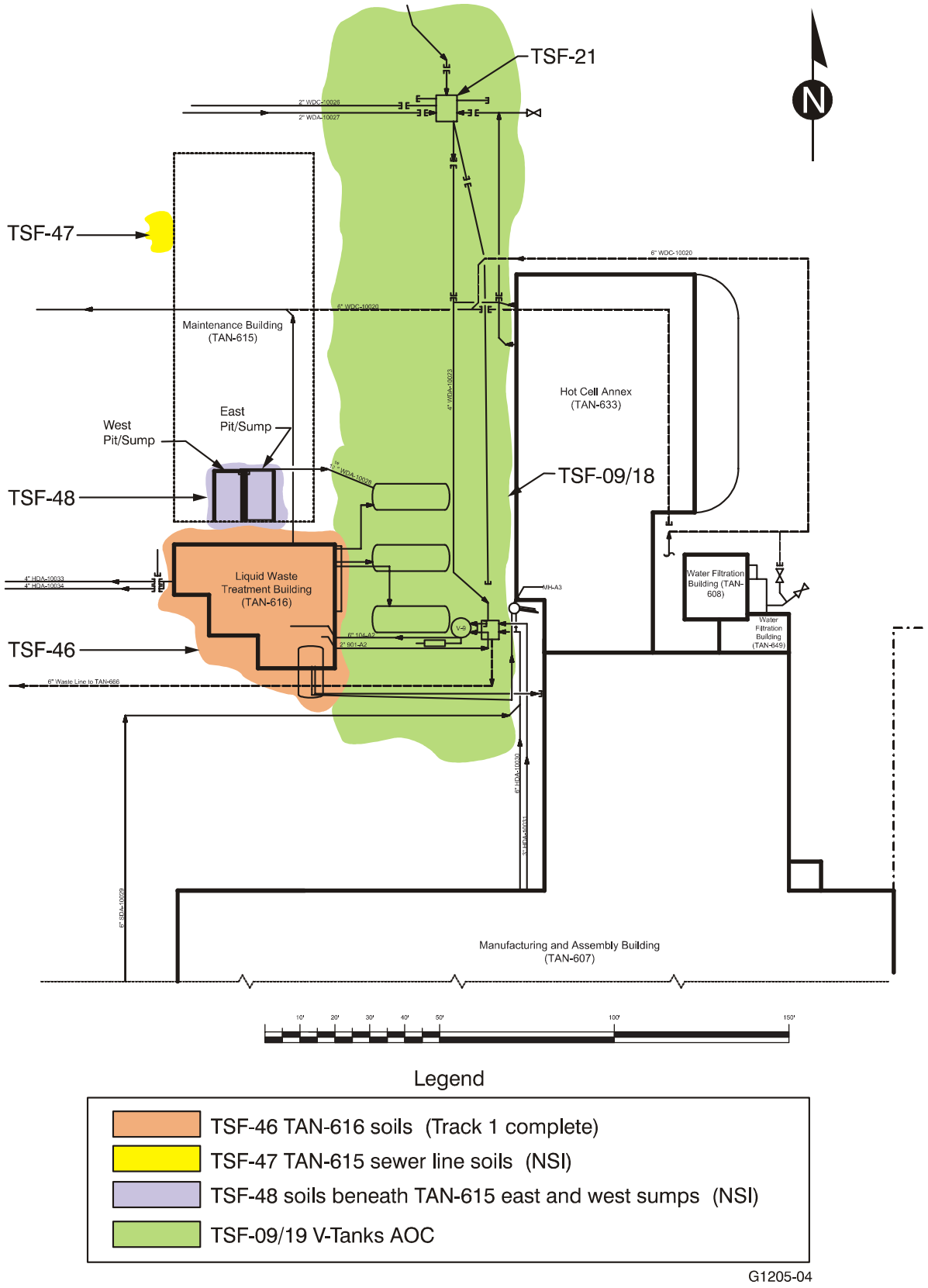

Figure 2-3. Proximity of TSF-46, TSF-47, and TSF-48 to Test Area North V-Tanks.

2.1.1 TSF-46, TAN-616 Soils

The TSF-46 site consists of soil within and around the footprint of TAN-616. The TAN-616 facility is a concrete structure located northeast of TAN-607. The building is within 2.4 m (8 ft) of the V-Tanks (V-1, V-2, and V-3) on the east, and 18.2 m (60 ft) of TAN-607 on the south. The outside dimensions of the facility are 10.9 × 14 m (36 × 46 ft) and the building is approximately 7 m (23 ft) tall.

TAN-616 was constructed in 1955 and contained an evaporator system, which was designed to collect, store, and concentrate radionuclide-contaminated liquid waste, mostly resulting from the decontamination of equipment and facilities. The evaporator system operated from 1958 until the early 1970s; TAN-616 was taken out of service in 1972 due to evaporator vessel integrity problems, and a temporary evaporator system was installed above the holding tanks (PM-2A Tanks, V-13 and V-14). From 1972 until 1975, wastewater may have been transferred via TAN-616 from the collecting tanks (V-1, V-2, and V-3) directly to the holding tanks, which at that time served as feed tanks to this temporary evaporator system.

TAN-616 is currently undergoing closure and subsequent DD&D under the Hazardous Waste Management Act (HWMA) (Idaho Code § 39-4401 et seq.) and the Resource Conservation and Recovery Act (RCRA) (42 USC § 6901 et. seq.). Soils underneath and around the facility will be excavated to support demolition and removal of TAN-616 and is discussed further in the "Notice of CERCLA Disturbance: Excavation of Soils Surrounding TAN-616" (INEEL 2004). Demolition debris (concrete, paint chips, etc.) that becomes commingled with CERCLA soils will be managed along with the CERCLA soils. Paint chips have been confirmed to contain >50 parts per million (ppm) polychlorinated biphenyl (PCB) and this requires the commingled soils to be managed as Bulk Product Waste.

2.1.2 TSF-47, TAN-615 Sewer Line Soils

TSF-47 is a site of an apparent past sewer/industrial line leak that was discovered by DD&D crews in 2002 while excavating the TAN-615 building piers during dismantlement of the facility. Soils in the vicinity of the piping were damp and the sewer line was still active. A radiological survey performed on this soil identified contamination of 30,000 disintegrations per minute (dpm).

The contaminated soil was 10–11 ft below ground surface, approximately 5 ft outside the west wall of TAN-615, and just above where an east-west 6-in. cast iron sanitary sewer line tied into a concrete line. The 6-in. sanitary sewer line upstream of the location of the contaminated soil has several sewer and industrial discharge feeder connections from several TAN buildings, including TAN-607, TAN-608, TAN-633, and TAN-615. Further excavation revealed that approximately 8 ft west from the tie-in point for the TAN-615 highbay drains, a crude concrete and plastic bag patch had been applied to the 6-in. drain line. At the time of discovery, the damaged section of pipe, as well as the section of pipe that contained the old tie-in from the highbay drains, was replaced with new pipe and the area backfilled with clean soil. (INEEL 2003). The section of the sewer line located within the TSF-47 area that will be disturbed during activities described in this WMP is currently not in use.

2.1.3 TSF-48, TAN-615 East & West Pits/Sumps Area Soils

The TSF-48 site consists of the soil beneath and around two pits/sumps, that were located in the south end of TAN-615 approximately 6 ft away from the foundation walls of the TAN-616 building. The TAN-615 building was originally constructed in 1955 to assemble and test nuclear reactors for the Aircraft Nuclear Propulsion Program, although the building was never used for this purpose.

The east pit/sump was located in the test area and was referred to as the test pit/sump. The pit was 8 × 14 × 8 ft deep and contained a sump located in the northwest corner. The sump's dimensions were 12 × 12 in. with a depth of 3.8 ft. The test area originally was used for the testing of fuel assemblies. The east pit/sump and ancillary piping were reported to be out of service for their original use prior to 1971. Between 1971 and 1978, there was no known use of the east pit/sump, and TAN operations were in a shutdown mode during most of that time. Around 1978, the pit/sump was decontaminated and then converted to use as part of the LOFT control rod drive mechanism testing. From 1978 to about 1985, testing included filling and evacuating the east pit/sump with demineralized water. The pit/sump and ancillary piping were out of service by 1985 when assembly of LOFT fuel ceased.

The west pit/sump was located in the decontamination area and was referred to as the decontamination pit. The pit was 8 × 14 × 8 ft deep and contained a sump located in the northeast corner. The sumps dimensions were 12 × 12 in. with a depth of 9 in. The west pit/sump and ancillary piping pit were reported to be out of service for its original use prior to 1971. The decontamination tanks, pump, a fume hood, and exhaust stack were removed before the early 1970s when the mission of the Actuator Facility was changed to support the LOFT Program. Between 1971 and 1976 there was no known use of the west pit/sump.

The TAN-615 building, including the east and west pits/sumps, was decontaminated and dismantled in 2002. The TAN-615 east and west pits/sumps were excavated to a depth of 11–12 ft and sent to the Radioactive Waste Management Complex (RWMC) for disposal. The area was then backfilled to approximately 4 ft below ground surface (bgs). The project completion is described in *Final Report for the Decontamination and Decommissioning of the Test Area North-615* (INEEL 2003).

3. WASTE MANAGEMENT

3.1 Waste Stream Identification

A summary of the waste streams anticipated to be generated during the sampling, analysis and remediation of the V-Tank Area New Sites is presented in Table 3-1. The information provided in this table includes the activities that will generate the waste, the waste types and applicable waste codes, estimated waste volumes, and the planned disposal options. This table will be updated as necessary during the design process and/or if additional data or information becomes available for the sites.

It is expected that the contaminants of concern in the soil generated from activities discussed in this WMP will be within the bounds of the material profile that has already been developed for V-Tank area soils, and that the soil will be disposed of at ICDF under this profile. If a new waste stream is identified during implementation of either sampling or remediation that is not listed in Table 3-1 of this plan, it will be characterized by using process knowledge to complete a waste profile, or, in the absence of such information, the waste stream will be sampled and analyzed and a material profile developed. The new waste stream will be documented in the field logbook, and noted by Waste Generator Services (WGS) personnel, and the project files for inclusion in the remedial action report following completion of that remedial action.

3.2 Minimization and Segregation

Wherever possible, waste minimization strategies will be employed during implementation of the remedies. Waste minimization for this project will be accomplished through design and planning to ensure efficient operations that will not generate unnecessary waste. Pre-job briefings will emphasize waste reduction philosophies and techniques, and personnel will be encouraged to continuously suggest or improve methods for minimizing waste generation. Estimated waste volumes demonstrate specific waste minimization and waste segregation methods integral to the design for this remedial action. Those methods will include the following:

- Contaminated equipment will remain within the area of contamination (AOC) during the remedial action. The traffic flow is designed to facilitate transfer of waste from equipment within contaminated areas to equipment staged in clean areas for transfer to the ICDF. This strategy will prevent contamination from being tracked to clean areas.
- Clean fill may be used to cover the entire site to mitigate the spread of contamination and minimize the waste inventory.
- Radiological field screening will be performed during excavation of the soil to aid in segregating clean soil (that could possibly be used as backfill) from contaminated soil that will be disposed of at the ICDF. Soil screening also will help ensure that equipment is staged on clean soil in the bottom of the excavation.
- Soil stockpiles staged will be covered with plastic when not in use to prevent the potential for windblown contamination.
- Water spray will be used to prevent the generation of airborne contamination during excavation activities. Conversely, the use of water spray during remediation activities will be monitored by designated field personnel to ensure that excessive water is not applied, thus minimizing the generation of liquid waste.
- Decontamination will be performed using dry methods, where possible, such as brushing, sweeping, and wiping.

Table 3-1. Waste stream summary for V-Tank Area New Sites.

Remedial Action Activity	Waste Description	Location	Expected Type and Applicable Waste Codes	Estimated Volume	Planned DOT Class Packaging[a]	Storage Location	Planned Treatment/Disposal[b]
Excavate TSF-46 and TSF-48 soils	Soil; may contain debris such as concrete rubble, asphalt, paint chips, rebar, wood, plastic	TSF-46 and TSF-48	TSCA/MLLW[c]	1,100 yd^3	Class 7 LSA Soil Bags in Roll-off Containers	CERCLA WSA	Treatment as required and disposal at ICDF
Excavate TSF-47	Soil	TSF-47	MLLW[c]	439 yd^3	Class 7 LSA Soil Bags in Roll-off Containers	CERCLA WSA	Treatment as required and disposal at ICDF
Decontaminate excavation equipment	Debris (e.g., PPE, tools, rags, etc.)	TSF-46, TSF-47 and TSF-48 (designated decon area)	MLLW[c]	50 ft^3	Class 7 LSA Metal drums	CERCLA WSA	Treatment as required and disposal at ICDF
Decontaminate excavation equipment	Decon water	TSF-46, TSF-47 and TSF-48 (designated decon area)	MLLW[c]	<55 gal	Class 7 LSA Metal drums	CERCLA WSA	Absorb/solidify free liquid; Assume waste meets LDRs; no treatment required at ICDF
Sample TSF-46, TSF-47 and TSF-48 soil piles, and soils within the excavation	Decon Water	TSF-46, TSF-47 and TSF-48	MLLW[c]	<55 gal	Class 7 LSA Metal drums	CERCLA WSA	Absorb/solidify free liquid; Assume waste meets LDRs; no treatment required at ICDF
Sample TSF-46, TSF-47 and TSF-48 soil piles, and soils within the excavation	Altered and Unaltered Samples and sample residues	TSF-46, TSF-47 and TSF-48	TSCA/MLLW[c]	Will be treated, if necessary and disposed of by Analytical Laboratory			
Sample TSF-46, TSF-47 and TSF-48 soil piles, and soils within the excavation	Debris (e.g., PPE, tools, rags, etc.)	TSF-46, TSF-47 and TSF-48	MLLW[c]	<10 ft^3	Class 7 LSA Metal drums/boxes or wooden waste boxes	CERCLA WSA	Treatment as required and disposal at ICDF

Table 3-1. (continued).

Remedial Action Activity	Waste Description	Location	Expected Type and Applicable Waste Codes	Estimated Volume	Planned DOT Class Packaging[a]	Storage Location	Planned Treatment/Disposal[b]
Other remedial action activities[d]	IW	TSF-46, TSF-47 and TSF-48	IW	TBD			INEEL Landfill Complex or TAN Demolition Landfill
Other remedial action activities[d]	LLW	TSF-46, TSF-47 and TSF-48	LLW	TBD			RWMC or ICDF

AOC area of contamination
CERCLA Comprehensive Environmental Response, Compensation, and Liability Act
DOT Department of Transportation
ICDF INEEL CERCLA Disposal Facility
IW industrial waste
LDR land disposal restriction
LLW low-level waste
LSA low specific activity
Pb lead
PCB polychlorinated biphenyl
PPE personal protective equipment
WSA waste storage area

a. The packaging determination is made from comparing the currently available data for TSF-46, TSF-47, and TSF-48 with the packaging requirements of Plan (PLN) -120.
b. Wastes that do not meet LDRs will be treated, as appropriate, or shipped off-Site to another facility for treatment and disposal.
c. Manage as F001 because the soil was commingled with TSF-09/18 F001 waste.
d. These waste types are included as placeholders in the event that these types of waste streams are identified during remediation activities.

4. WASTE CHARACTERIZATION STRATEGY

The implementation of the remedies for the V-Tank Area New Sites project will generate CERCLA remediation waste. It is expected that the contaminants of concern in the soil generated from activities covered under this WMP will be within the bounds of the material profile that has already been developed for V-Tank area soils per the *ICDF Complex Material Profile Guidance* (DOE-ID 2003a), and that the soil will be disposed of at ICDF under this profile.

The soils excavated during remediation of these sites that are intended for disposal will be held in a staging area at or near the excavation site prior to profiling and dispositioning to the ICDF. Waste streams will be identified and characterized, and the land disposal restriction (LDR) status will be determined, thereby ensuring that all applicable or relevant and appropriate requirements (ARARs) are met before the waste is shipped for potential treatment, storage, and disposal (TSD). It is assumed for purposes of the V-Tank Area New Sites remedial designs that all waste generated during these remedial actions will meet LDRs without treatment, and that all remediation waste generated will be accepted for disposal at the ICDF, although some treatment could be required to meet the ICDF waste acceptance criteria (WAC) (as discussed in Section 4.1.1).

Waste managed in accordance with this WMP will be characterized by using approved sampling and analytical information, or by using process knowledge. When waste characterization is based solely on process knowledge, it must be ensured that the chemical, physical, and radiological properties of the waste are adequately determined. The designation must be accomplished with sufficient accuracy to ensure that subsequent treatment, storage, or disposal of the waste is protective of human health and the environment. Approved sampling design and data quality are outlined in the Field Sampling Plan (FSP) (DOE-ID 2004b).

In addition to the requirements of the ICDF WAC, all CERCLA remediation waste meeting the definition of debris defined in 40 Code of Federal Regulations (CFR) 268.2 will be characterized by applying knowledge of the waste constituents expected to be contaminating the debris. Engineering design file (EDF) -3570, “Waste Characterization Strategy for Contaminated Debris,” provides the basis for characterizing debris by assuming standard contamination levels (related to the original waste concentration).

4.1 INEEL Management and Disposition

The management and disposition of the waste streams described in this WMP are based on information from the RI/FS (DOE-ID 1997), the ROD (DOE-ID 1999), the Remedial Design/Remedial Action Work Plan (RD/RAWP) (DOE-ID 2002), the RD/RAWP Addendum (DOE-ID 2004a), and other available data. Estimated volumes, initial characterizations, anticipated treatments (if any), and planned dispositions were developed and reviewed in the preparation of this WMP. A primary objective of this plan is to evaluate the appropriateness of management and disposal options for the anticipated waste. Appropriateness of a disposal option is based on whether a particular waste could reasonably be expected to cause or contribute to an environmentally significant release of hazardous substances from a selected facility. Releases of hazardous substances to the air or groundwater in quantities that could be reasonably expected to pose a significant threat to human health and the environment are considered environmentally significant. Any waste described in this WMP that would be reasonably expected to exceed this threshold criterion will be evaluated separately to determine the suitability of the waste for disposal. Waste designated for disposal will not be shipped unless special provisions are made and documented to mitigate the potential for release.

Waste generated at the INEEL as a result of CERCLA remedial activities includes hazardous, mixed low-level waste (MLLW), low-level radioactive waste (LLW), and industrial waste (IW). These various types of waste may contain contaminants such as PCBs or asbestos that might be regulated by the Toxic Substances Control Act (TSCA) (15 USC 2601 et seq.) and the National Emissions Standards for Hazardous Air Pollutants (40 CFR 61). This waste may be disposed of at the INEEL, if it meets the specific facility's WAC. Most of the CERCLA-generated waste will be sent to the ICDF for disposal, although CERCLA-generated IW is typically disposed of at the INEEL Landfill Complex (i.e., the Central Facilities Area (CFA) Landfill). The use of the RWMC is an additional option for disposal of suitable CERCLA-generated LLW.

4.1.1 Waste Planned for Disposal at the INEEL CERCLA Disposal Facility

Most of the waste described in this plan is expected to be disposed of at the ICDF. This waste will be required to meet the ICDF's current WAC, as delineated in *ICDF Complex Waste Acceptance Criteria* (DOE-ID 2003b) and *Waste Acceptance Criteria for ICDF Landfill* (DOE-ID 2004c). Both hazardous and MLLW must meet applicable RCRA LDRs.

4.1.2 Waste Transported to Non-INEEL Facilities

Some of the waste generated during CERCLA remedial activities may be sent to a TSD facility located outside INEEL boundaries. However, CERCLA hazardous or mixed waste that is sent outside INEEL Site boundaries for treatment, storage, or disposal may be sent only to a permitted or interim status TSD facility that has been found suitable to receive hazardous waste from CERCLA remediation sites by the TSD facility's own U.S. Environmental Protection Agency (EPA) regional office, in accordance with 40 CFR 300.440(a)(4).

4.1.3 Wastes Planned for Disposal at Non-CERCLA INEEL Facilities

The primary list of hazardous substances under CERCLA is contained in 40 CFR 302.4, "Designation of Hazardous Substances." As the remedial process proceeds and additional information regarding the waste becomes available, reviews that are more detailed will be conducted (as described below) to ensure that waste planned for specific disposal options meets the detailed WAC for each specific facility.

4.1.4 Managing Low-Level Waste for Disposal at the Radioactive Waste Management Complex

The RWMC includes a LLW disposal unit operated by the DOE under the Atomic Energy Act, as amended (42 USC § 2011 et seq.). Operations of the LLW disposal facility at the RWMC are governed by DOE orders. Department of Energy Headquarters has determined that the RWMC LLW disposal facility complies with DOE orders and that the facility is authorized to operate. To ensure that the LLW sent to RWMC for disposal is appropriate and suitable for disposal at RWMC, the waste is evaluated by WGS to ensure that the waste will meet RWMC WAC. The RWMC is not permitted by the EPA or licensed by the Nuclear Regulatory Commission to dispose of RCRA hazardous or mixed waste. To ensure hazardous or mixed waste is not sent to RWMC, a hazardous waste determination for each waste stream will be completed by WGS to ensure that the CERCLA LLW (a) does not exhibit the characteristics of a hazardous waste and has not been in contact with a listed hazardous waste or (b) that it has been analyzed to demonstrate that it no longer contains a hazardous waste above risk-based concerns. The hazardous waste determination will be based on process knowledge when sufficient process knowledge is available. When sufficient process knowledge is not available, then analytical data will be collected to make the

hazardous waste determination. To help ensure that LLW is managed to protect human health and the environment, the RWMC employs the following methods:

- Characterization of CERCLA LLW by WGS to ensure that the requirements of the WAC are met before shipment to the RWMC
- Prohibiting receipt of RCRA hazardous or mixed waste
- Prohibiting receipt of free liquids at the facility
- Inspections of received waste to validate that the waste meets the WAC and is consistent with the waste profile
- Implementation of an environmental monitoring program at the RWMC.

4.1.5 Managing Industrial Waste for Disposal at the INEEL Landfill Complex

Industrial waste is solid waste that is neither radioactive nor hazardous. At the INEEL, IW streams typically are disposed of at the INEEL Landfill Complex. The EPA has reviewed the compliance history of the landfill and method of operations and has determined that it is suitable to receive waste from CERCLA sites. Many types of CERCLA IW are generated in the AOC as a result of material used in a remediation project that the generator believes has not been contaminated with either radioactive or hazardous materials. This absence of contamination is validated by radiation surveys or visual inspections. A general hazardous waste determination is prepared for routinely generated IW to document that the waste is neither radioactive nor hazardous. Industrial waste streams that have a higher probability of containing constituents restricted from disposal are considered nonroutine and will undergo a waste stream-specific hazardous waste determination. This determination is accomplished by sampling, performing radioactive surveys, using process knowledge of the waste-generating process (e.g., determining if the waste was mixed with a listed waste or derived from the treatment, storage, or disposal of a listed waste), and evaluating the composition of the IW. Waste Generator Services evaluates CERCLA IW to determine if the waste meets the IW acceptance criteria. Industrial waste is generally collected in IW collection dumpsters posted with signs describing acceptable and prohibited items. However, to ensure that disposal of IW is protective of human health and the environment, the INEEL Landfill Complex employs the following additional methods:

- Characterization of IW by WGS to ensure that the requirements of the WAC are met before to shipment to the facility
- Prohibiting receipt of radioactive and hazardous waste
- Prohibiting receipt of free liquids at the landfill
- Inspecting received waste to validate that it meets the acceptance and waste determination criteria
- Periodic location and sampling of groundwater monitoring wells near the INEEL Landfill Complex.

4.1.6 Managing Industrial Waste in the TAN Demolition Landfill

CERCLA industrial waste generated at TAN may be disposed of at the TAN Demolition Landfill if it meets the WAC for the landfill. Only nonradiological/nonhazardous construction and demolition waste will be accepted for disposal. Compliance with the WAC will be ensured by radiological surveys of the waste prior to shipment to the landfill, characterization of the waste by WGS to ensure that the requirements of the WAC are met before shipment to the facility, and finally, inspections of received waste to validate that it meets the acceptance criteria. These checks together ensure that there will not be a significant release of hazardous substance to the environment.

4.1.7 Waste Packaging and Transportation

Before CERCLA waste is transported to a disposal facility, WGS and packaging and transportation personnel will be contacted to ensure that the waste is properly containerized and labeled and meets the disposal facility WAC. All sampling and transportation will occur in compliance with the applicable transportation regulations as specified in Plan (PLN)-120, "Hazardous Material Packaging and Transportation Quality Implementation Plan." Contact with the disposal facility must be made in advance to allow both the facility and the shipper the time required to make any preliminary arrangements.

4.1.8 Managing Waste Information

Information pertaining to waste characteristics, waste generation and storage locations, disposition plans, and waste shipments for CERCLA MLLW, CERCLA LLW, and nonroutine CERCLA IW generated at the INEEL is maintained in an electronic database called the Integrated Waste Tracking System (IWTS). Material profiles are developed by the IWTS to provide characterization information that is specific to a particular waste stream. As the waste is generated, information pertaining to individual containers of waste is reported in individual IWTS container profiles.

The information in the IWTS material profiles and container profiles is certified by a WGS waste technical specialist (WTS), who certifies that a hazardous waste determination has been performed and that the information is complete and accurate based on the analytical data or process knowledge used for characterization. The WTS also certifies that the information for the container falls within the bounds of the parent material profile. A different WGS WTS follows with an independent review of the information for completeness and accuracy. Finally, the information in the material and container profiles is approved by a WGS WTS who authorizes WGS to dispose of the waste in accordance with the disposition path defined in the IWTS material profile and authorizes that the waste meets the acceptance criteria of the facility or facilities where the waste will be disposed of. This approval must not be performed by the WTS performing the review.

Waste technical specialists use the information in the IWTS material and container profiles to ensure that CERCLA waste meets the acceptance criteria of the receiving facility. The IWTS also tracks shipments of waste to various facilities using specific IWTS shipping tasks. All receiving facilities, including those located outside the boundaries of the INEEL, must approve waste shipments before they are shipped. This approval is not documented in the IWTS database, but is maintained in a hard copy file with the waste characterization information.

It should be noted that not all CERCLA IW is tracked in the IWTS database. An example of IW that is not tracked in the IWTS is routine office waste. This waste is placed into IW receptacles that are placarded with permissible content information. Some IW is tracked in the IWTS database to ensure that the INEEL Landfill Complex is aware that the waste is being shipped and that it meets the facility's acceptance criteria. An example of IW that is tracked in the IWTS is color-coded material such as yellow

shoe covers. Since yellow shoe covers are typically used for protection against radioactive contamination, a special profile has been prepared for color-coded personal protective equipment that has been either surveyed and found not to be contaminated with radioactivity, or that has been used for training purposes. Another example is containers that have had all contents removed and are not radiologically contaminated. Container profiles are typically not prepared for IW because the waste is shipped to the facility in reusable receptacles, in bulk shipments, or is not containerized.

There will be MLLW and possibly TSCA PCB waste generated at physical interfaces between HWMA/RCRA and CERCLA-managed programs. The MLLW and/or TSCA PCB waste generated to support CERCLA remediation activities will be managed as CERCLA remediation waste (as detailed in this WMP) and in accordance with the ROD (DOE-ID 1999) and the *Record of Decision Amendment for the V-Tanks (TSF-09 and TSF-18) and Explanation of Significant Differences for the PM-2A Tanks (TSF-26) and TSF-06, Area 10, at Test Area North, Operable Unit 1-10* (DOE-ID 2004d). The MLLW and/or TSCA waste generated to support Voluntary Consent Order activities will be managed in accordance with applicable HWMA/RCRA and/or TSCA regulations.

4.1.9 Storage, Inspection, and Recordkeeping

Storage, inspection, and recordkeeping will be performed according to the ARARs identified in the ROD and the Explanation of Significant Differences (DOE-ID 1999, 2004d). A sample checklist for the waste storage area (WSA) is included in Appendix A. Waste generated from this remediation project may be transported to INEEL TSD facilities that are appropriate to each specific waste type. Mixed low-level waste and TSCA waste will only be managed in facilities approved for the specific waste type.

4.1.10 Managing Waste in the Area of Contamination

Work within the AOC includes soil excavation, removal, and soil sampling. For waste management purposes, the AOC is defined as the area of contiguous contamination surrounding TSF-46, TSF-47, and TSF-48 sites. This area is delineated by the presence of radioactive or hazardous contamination. Waste generated as part of this remediation effort may be managed within the AOC or at other appropriate waste management facilities. Hazardous waste that is generated during remediation activities, and that leaves the AOC, will be required to meet land disposal restriction standards before disposal.

4.1.11 Management of Excavated Soils during Remedial Activities

4.1.11.1 Excavation of Contaminated Soils to Support other Remediation Activities.

Where contaminated soils are disturbed solely to facilitate other planned remediation activities, where those soils will be managed in an area near or adjacent to the point of excavation, and where those soils are to be returned to the point of excavation, those soils shall be managed according to the following guidelines:

- Soils shall be managed as close as practical to the point of excavation
- Soil piles shall be covered to prevent windblown or precipitation-enhanced dispersal of contamination whenever there is a planned cessation of active work at that site (e.g., overnight)
- Soil piles shall be returned to the excavation as soon as practical
- If the decision is made to treat, store, or dispose of this soil at a different location, the soil or soil piles will then be subject to the requirements for contaminated soils planned for treatment, storage, or disposal, which are outlined in the next subsection.

4.1.11.2 Contaminated Soils Planned for Treatment, Storage, or Disposal. Excavated soils that are planned for treatment, storage, or disposal at another location shall be expeditiously placed in trucks or other transportation containers for transport. When transport is not expeditiously available after excavation, contaminated soils shall be placed in staging piles to be appropriately managed until transport is available. These staging piles will be established as registered CERCLA WSAs and inspected weekly to ensure the piles are managed in compliance with the standards and requirements contained within this section of the WMP pertaining to staging piles. A sample checklist for weekly staging pile inspection is provided in Appendix A.

Staging piles will be managed in accordance with ARARs of 40 CFR 264.554. The requirements below provide the Agencies (i.e., DOE Idaho Operations Office, EPA, Idaho Department of Health and Welfare) the opportunity to review, comment, and concur with the management of soils under this approach. The Agencies concurrence with this WMP is the CERCLA equivalent of the director's designation of the standards and design criteria that would be required to operate RCRA staging piles if this project were regulated under RCRA requirements. Placing hazardous remediation wastes into a staging pile does not constitute land disposal of hazardous wastes or create a unit that is subject to the minimum technological requirements of RCRA 3004(o) (Public Law 94-550).

The management of contaminated soils in staging piles requires compliance with the following requirements:

- Contaminated soils shall be stockpiled in staging piles located near or adjacent to the area of excavation.

- Only solid, nonflowing remediation waste (i.e., soils) that would meet the definition of remediation waste in 40 CFR 260.10 shall be included in the staging pile. It is expected that the overall physical and chemical characteristics of the soils to be placed in these staging piles will generally be indistinguishable from the surrounding soils by visual examination. The primary difference will be the presence of radionuclides or hazardous constituents that would preclude release of the site for unrestricted use. The volumes of soil addressed in this plan will be projected in the tables in Section 3.

- Treatment of waste in these staging piles is not allowed.

- Staging piles will be used expressly for facilitating an effective remedial action.

- Staging piles shall be covered or have stabilization agents applied whenever active remedial activities are not underway (e.g., overnight or when active movement of soils either into or out of the pile are not proceeding during normal operational periods) in order to reduce wind-blown or precipitation-enhanced releases of contamination.

- Access to the remediation areas and the staging piles will be restricted by the use of signs and fences, as appropriate to restrict access to the area of contamination and remediation site until remediation has been completed and confirmed.

- Ignitable and/or reactive soil cannot be stored in a staging pile unless the waste has been treated and is no longer ignitable or reactive.

- The staging piles must be established and maintained to ensure separation of incompatible soil and other waste.

- Upon completion of other remediation activities at the CERCLA sites, all remaining contaminated soils associated with the staging piles must be removed and disposed of at an approved disposal facility in order to complete remediation activities.

- All contaminated structures and/or equipment associated with the staging piles will be removed, disposed of, or decontaminated for reuse.

- Staging piles must be completely removed by the end of the field season immediately following the field season in which the staging pile was created, unless specific approval for an extension is obtained from the Agencies (typically limited to one additional year).

4.1.11.3 Remediation of Contaminated Soils and Potential for Return to Excavation. The following approach applies to just the TAN OU 1-10 project and is only appropriate when the sole final remediation goal (FRG) for a remediation project is based on Cs-137 (i.e., remove contaminated soils to less than 23.3 pCi/g in the upper 10 ft. of soil). In order to meet this FRG, soils above 23.3 pCi/g Cs-137 in the top 10 ft will be excavated. Additional soils may be excavated at the discretion of the project manager (e.g., to reduce the need for institutional controls). Removal of large quantities of additional soils requires approval by the WAG manager and concurrence of the Agencies. Large quantities are defined as those that would entail multi-day extension of the excavation project.

Excavated soils may be used for backfill only to the extent that they do not drive further remediation or extend the need for institutional controls either in time or in area. Different rules will apply for the backfilling of subsurface soils (excavated volume below 10 ft beneath ground surface) and surface soils (within 10 ft of the ground surface). Guidance for returning contaminated soils to the excavation is graphically shown in Table 4-1 and explained by the following:

1. Clean soil (less than 2.3 pCi/g) can always be brought in for any areas requiring backfill.

2. If after remediation, both the surface soils and subsurface soils have been remediated to less than 2.3 pCi/g, then only backfill soils with less than 2.3 pCi/g of Cs-137 can be used for that backfill.

3. If after remediation, the surface soils are less than 2.3 pCi/g Cs-137, but the subsurface soils remain contaminated with Cs-137 between 2.3 and 23.3 pCi/g, then the subsurface volume can be backfilled with soils up 23.3 pCi/g of Cs-137. The surface soil excavated area must be backfilled with soils less than 2.3 pCi/g of Cs-137.

4. If after remediation, the surface soils are less than 2.3 pCi/g Cs-137, but the subsurface soils remain contaminated with Cs-137 greater than 23.3 pCi/g, then the subsurface volume can be backfilled with soils up to the same concentration left in place in the subsurface soils. The surface soil excavated area must be backfilled with soils less than 2.3 pCi/g of Cs-137.

5. If after remediation, the surface soils are between 2.3 and 23.3 pCi/g Cs-137, but the subsurface soils show Cs-137 contamination less 2.3 pCi/g, then both the subsurface and surface soils can be backfilled with soils at the same concentration as the soils left in place.

6. If after remediation, both the surface and subsurface soils are between 2.3 and 23.3 pCi/g Cs-137, then both of these areas can be backfilled with soils at the same concentration as those left in place.

7. If after remediation, the surface soils are between 2.3 and 23.3 pCi/g Cs-137, but the subsurface soils remain contaminated with Cs-137 above 23.3 pCi/g Cs-137, then the subsurface backfill volume can be backfilled with soils up to the concentration of the soils remaining in the subsurface. The surface soil excavated area will be backfilled with soils less than 23.3 pCi/g of Cs-137.

Note: *The situations most likely to be encountered are items 6 and 7.*

Table 4-1. Use of contaminated soils for backfill.

		Surface Soils (0–10 ft) remediated to:	
		<2.3 pCi/g Cs-137	> 2.3 but <23.3 pCi/g Cs-137
Subsurface Soils (soils >10 ft bgs) Contamination Left in Excavation	After Remediation <2.3 pCi/g Cs-137	b1) ***Backfill 0–10 ft*** Clean soil <2.3 pCi/g Cs-137	e1) ***Backfill 0–10 ft*** Soil <23.3 pCi/g Cs-137
		b2) ***Backfill below 10 ft*** Clean soil <2.3 pCi/g Cs-137	e2) ***Backfill below 10 ft*** Soil <23.3 pCi/g Cs-137
	>2.3 but <23.3 pCi/g Cs-137	c1) ***Backfill 0–10 ft*** Clean soil <2.3 pCi/g Cs-137	f1) ***Backfill 0–10 ft*** Soil <23.3 pCi/g Cs-137
		c2) ***Backfill below 10 ft*** Soil <23.3 pCi/g Cs-137	f2) ***Backfill below 10 ft*** Soil <23.3 pCi/g Cs-137
	> 23.3 pCi/g Cs-137	d1) ***Backfill 0–10 ft*** Clean soil <2.3 pCi/g Cs-137	g1) ***Backfill 0–10 ft*** Soil <23.3 pCi/g Cs-137
		d2) ***Backfill below 10 ft*** Soil up to concentration left in place	g2) ***Backfill below 10 ft*** Soil up to concentration left in place

After completion of excavation and removal of other contaminated items, confirmation sampling will be conducted of the excavated area to confirm that removal activities are complete. This confirmation sampling to determine the 95% UCL estimate of the population mean concentration (based upon an approved FSP) will be used to establish the guidelines for use of Table 4-1.

Similar sampling (specified in the approved FSP) utilizing the same equipment will be used to document the Cs-137 concentration in soil piles that may be potentially used for backfill. Sampling strategies may be based upon random core sampling of soil piles or large area surveys both with associated puck analysis to determine the 95% UCL on the mean for use in Table 4-1.

Further FRGs may be developed as a result of sampling for the presence of V-Tank soil constituents remaining after excavation. Should further FRGs be identified, this strategy may or may not be appropriate. The identification of further FRGs will require additional review.

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Appendix A

CERCLA Soil Staging Pile Area Checklist and Deficiency Resolution Tracking Table

Appendix A

CERCLA Soil Staging Pile Area Checklist and Deficiency Resolution Tracking Table

The sample checklist and deficiency resolution tracking table contained in this appendix are provided for information purposes only. The checklist and the deficiency resolution tracking table are expected to be modified as appropriate in order to effectively manage soils in a staging area under this plan.

CERCLA Storage Area Inspection Checklist

Registration Number: TBA

	Yes	No	N/A	
1				Is there Waste in the Area? IF "NO", inspection is complete, sign and date below.
2				Is an up-to-date copy of the registration form posted at the area?
3				Is the housekeeping in the area adequate?
4				Do quantities recorded in the logbook approximately equate to the quantities stored in the area?
5				Are waste types and quantities in accordance with those specified in the Appendix L of the INEEL Emergency Plan/RCRA Contingency Plan?
6				Is the Emergency and Communications Equipment present as listed in the Appendix L of the INEEL Emergency Plan/RCRA Contingency Plan?
7				Is the surface of the staging pile covered in such a manner as to reduce the potential for windblown erosion of the staging pile? (Coverage may be by tarp, fixative, or similar cover.)
8				Is there evidence of erosion channels or windblown material being released from the area since the last inspection?
9				If "Yes" to question 9, has the spill or release been reported to the Emergency Coordinator listed in the Appendix L?
10				If "Yes" to 9, has the spill or release been remediated and the spill and remediation documented on this checklist?
11				Have previously identified deficiencies undergone resolution? Indicate status on back of inspection form.

CERTIFICATION OF INSPECTION

I certify that all of the above applicable items have been inspected.

Date _____ Time _____

Name (print) _____ (Inspector)

Signature _____

Deficiency Resolution Tracking Table

For each "No" answer identified on the inspection checklist, note the item number and describe the nature of the deficiency in the table. Each week, indicate the status of previously identified deficiencies that have not yet been resolved.

Inspection Item Number	Date Identified	Description of Deficiency	Deficiency Resolution Status

This checklist must be maintained at the facility for the current inspection year and 5 years hence.

CERCLA Storage Area Inspection Checklist (Sample)

Registration Number

YES NO N/A

1. ___ ___ ___ Is there waste in the area? IF "NO," inspection is complete, sign and date below.

2. ___ ___ ___ Is an up-to-date copy of the registration form posted at the area?

3. ___ ___ ___ Are "**NO SMOKING**" signs posted in the area if storing RCRA ignitable or reactive waste?

4. ___ ___ ___ Are all waste containers labeled with the words "CERCLA WASTE" and an IWTS barcode?

5. ___ ___ ___ Are all nonwaste items stored in the area appropriately marked or labeled for identification?

6. ___ ___ ___ Is the housekeeping in the area adequate?

7. ___ ___ ___ Is there adequate aisle space for personnel and equipment to respond to emergencies?

8. ___ ___ ___ Are all waste containers closed except when adding or removing waste?

9. ___ ___ ___ Is each waste container compatible with the waste stored in it?

10. ___ ___ ___ Are all waste types segregated within the area to maintain requirements for compatibility?

11. ___ ___ ___ Do quantities recorded in the logbook equal quantities stored in the area?

12. ___ ___ ___ Are waste types and quantities in accordance with those specified in the Appendix L of the INEEL Emergency Plan/RCRA Contingency Plan?

13. ___ ___ ___ Is the Emergency and Communications Equipment present as listed in the Appendix L of the INEEL Emergency Plan/RCRA Contingency Plan?

14. ___ ___ ___ Are there, or have there been, any releases or spills in the area since the last inspection?

15. ___ ___ ___ If "Yes" to Question 14, has the spill or release been reported to the emergency coordinator listed in the Appendix L of the INEEL Emergency Plan/RCRA Contingency Plan?

16. ___ ___ ___ If "Yes" to Question 14, has the spill or release been remediated and the spill and remediation documented on this checklist?

17. ___ ___ ___ Are all containers and/or PCB items in good condition with no leakage or signs of deterioration?

18. ___ ___ ___ Is PCB containment volume equal to 2 times the internal volume of the largest PCB article or PCB container, or 25% of the total internal volume of all PCB articles or containers, whichever is greater?

19. ___ ___ ___ Is the entrance to PCB storage marked with a large PCB M_L mark? (40 CFR 761.45)?

20. ___ ___ ___ Is each PCB item or container marked with a PCB M_L or M_S mark?

21. ___ ___ ___ Are items marked with an out-of-service date?

22. ___ ___ ___ Have previously identified deficiencies undergone resolution? Indicate status on back of inspection form.

CERTIFICATION OF INSPECTION

I certify that all of the above applicable items have been inspected.

Date _____ Time _____

Name (print) _____ (Inspector)

Signature _____

Deficiency Resolution Tracking Table (Sample)

For each "No" answer identified on the inspection checklist, note the item number and describe the nature of the deficiency in the table. A "Yes" answer to Question No. 14 would indicate a spill and should be logged as a deficiency. Each week, indicate the status of previously identified deficiencies that have not yet been resolved.

Inspection Item Number	Date Identified	Description of Deficiency	Deficiency Resolution Status

This checklist must be maintained at the facility for the current inspection year and 5 years hence.